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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,513	07/21/2003	Kenichi Fujita	030812	3785

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EXAMINER

RONESI, VICKEY M

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 05/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/622,513

Applicant(s)

FUJITA ET AL.

Examiner

Vickey Ronesi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12 and 15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12 and 15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. All outstanding rejections are withdrawn in light of applicant's arguments filed 2/24/2006.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior office action.
3. New grounds of rejection are set forth below in view of applicant's arguments filed 2/26/2006. Thus, *a 2nd non-final Office action is set forth as follows.*

Claim Rejections - 35 USC § 103

4. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeda et al (US 6,319,613).

Takeda et al discloses a composition comprising a binder such as a thermoplastic resin (col. 4, lines 36-44; col. 5, lines 39-41) and hexaboride particles (abstract) which are treated with a surface active agent such as a silicone (i.e., silane) coupling agent (col. 6, line 44). Amounts of hexaboride are exemplified ranging from 0.45-2.7 parts by weight per 100 parts by weight of binder (Table 1, Example 1 and Example 16 for endpoints). It is noted that the "silicone coupling agent" of Takeda et al is necessarily a silane coupling agent since a silicone by itself does not have a reactive functional group.

While Takeda et al does not exemplify a composition comprising a thermoplastic resin with hexaboride particles treated with a silane coupling agent, it teaches the advantages had by using silane coupling agents such as being able to control the surface resistivity. Therefore, it would have been obvious to one of ordinary skill in the art to utilize a silane-treated hexaboride

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particle in a thermoplastic resin in suitable amounts such as those used with the other types of binder.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher (US 2002/0086926) in view of *Hawley's* (*Hawley's Condensed Chemical Dictionary, 13th Edition*) and Takeda et al (US 6,319,613).

Fisher discloses an IR absorbing polyvinyl butyral composition comprising lanthanum hexaboride particles having a particle size less than 200 nm, preferably ranging from 5 to 200 nm (paragraph 0019), in an amount ranging from about 0.005 to about 0.1 wt % based on the entire composition (paragraph 0015) that is used as an interlayer in glass laminates (paragraph 0012).

While Fisher only discloses amounts of hexaboride of up to 0.1 wt %, it is considered that it would have been obvious to one of ordinary skill in the art to utilize a masterbatch which would necessarily contain a higher concentration of the hexaboride, including amounts like presently claimed, in order to improve the dispersion of the hexaboride in the final composition. Evidence to support the examiner's position is found in *Hawley's* which discloses that a previously prepared mixture composed of a base material and a high percentage of an ingredient that is critical to the product being manufactured is a masterbatch which permits uniform dispersion of very small amounts (less than 1% like the hexaboride in Fisher's composition) (pages 703-704).

With respect to surface treating the hexaboride, Fisher does not disclose that its hexaboride is surface-treated with a silane, titanium, or zirconium compound as presently claimed; however, note that it is open to other suitable additives (paragraph 0025).

Takeda et al discloses a composition comprising a binder such as a thermoplastic resin (col. 4, lines 36-44; col. 5, lines 39-41) and hexaboride particles (abstract) which are used with a surface active agent such as a silicone (i.e., silane) coupling agent (col. 6, line 44) to improve stability of the hexaboride particles (col. 5, lines 43-45) and to be able to control surface resistivity (col. 5, lines 53-56). It is noted that the “silicone coupling agent” of Takeda et al is necessarily a silane coupling agent since a silicone by itself does not have a reactive functional group.

Given the teachings by Takeda et al regarding the benefits of surface-treating hexaboride particles in polymer compositions, it would have been obvious to one of ordinary skill in the art to utilize a silane coupling agent to improve the dispersion and control surface resistivity of the hexaboride particles in Fisher.

With respect to the use of IR absorbing materials other than lanthanum hexaboride, Fisher discloses the use of lanthanum hexaboride as an IR absorbing material, however, it does not disclose the use of other lanthanide hexaborides and calcium hexaboride as presently claimed.

Takeda et al discloses a sunlight-shielding coating solution that utilizes fine hexaboride particles to impart sunlight-shielding properties which include compounds XB_6 where X = La, Ce, Nd, Gd, Tb, Dy, Ho, Sm, Eu, Er, Tm, Yb, Lu, Sr, or Ca (abstract).

In view of Takeda et al's recognition that lanthanum hexaboride and other lanthanide hexaborides and calcium hexaboride are equivalent and interchangeable, it would have been obvious to one of ordinary skill in the art to substitute lanthanide hexaboride with any of the hexaborides disclosed by Takeda et al and thereby arrive at the presently cited claims. Case law holds that the mere substitution of an equivalent (something equal in value or meaning, as taught

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by analogous prior art) is not an act of invention; where equivalency is known to the prior art, the substitution of one equivalent for another is not patentable. See *In re Ruff* 118 USPQ 343 (CCPA 1958).

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeda et al (US 6,319,613) or Fisher (US 2002/0086926) in view of *Hawley's (Hawley's Condensed Chemical Dictionary, 13th Edition)* and Takeda et al (US 6,319,613), and further in view of Wypych (*Handbook of Fillers*).

The discussion with respect to Takeda et al, Fisher, and *Hawley's* in paragraphs 4 and 5 above is incorporated here by reference.

Takeda et al teaches the use of silicone (i.e., silane) coupling agents, however, it does not teach the use of other types of surface treating agents.

Wypych also teaches the equivalency of using silicon, titanium, and zirconium compounds in surface-treating agents (page 320).

Therefore, given the teachings by Wypych regarding the benefits of surface-treating a hydrophilic filler with any one of silane, titanium, or zirconium compounds in polymeric compositions, it would have been obvious to one of ordinary skill in the art to utilize a titanium or zirconium compound as the surface treating agent of Takeda et al. Case law holds that the mere substitution of an equivalent (something equal in value or meaning, as taught by analogous prior art) is not an act of invention; where equivalency is known to the prior art, the substitution of one equivalent for another is not patentable. See *In re Ruff* 118 USPQ 343 (CCPA 1958).

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7. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher (US 2002/0086926) in view of *Hawley's* (*Hawley's Condensed Chemical Dictionary, 13th Edition*) and Takeda et al (US 6,319,613) and further in view of and Hall (EP 0 459 704).

The discussion with respect to Fisher, *Hawley's*, and Takeda et al in paragraph 5 above is incorporated here by reference.

Fisher does not disclose thermoplastic resins as presently claimed; however, Fisher discloses that other polymers which are used to form interlayer sheets of glass laminated could be substituted for the preferred PVB (paragraph 0021).

Hall discloses an impact-resistant windshield for pressurized aircraft and teaches that polycarbonate energy-absorbing glass laminate interlayers provide improved impact properties at elevated temperatures than conventional energy-absorbing glass laminate interlayers such as polyvinylbutyral and polyurethane which only provide satisfactory performance at low and normal ambient temperatures (col. 1, lines 25-44).

Given that Fisher is open to thermoplastic resins other than PVB and given that Hall teaches the benefit of polycarbonate interlayer in glass laminates, it would have been obvious to one of ordinary skill in the art to substitute the PVB of Fisher with polycarbonate resin and thereby arrive at the presently cited claim.

Response to Arguments

8. Applicant's arguments filed 2/26/2006 have been fully considered but they are not persuasive. Specifically, applicant argues that unexpectedly improved water resistance properties are had by surface treating the hexaboride particles.

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In response, first, there is no data regarding improved water resistance, only a statement that water resistance was shown to better in Example 6 (with silane treatment) than in Example 1 (no silane treatment) (page 36, line 15 to page 37, line 3). Second, it is not understood how water resistance is unexpected since silane treatments make the hexaboride particles hydrophobic and therefore necessarily not compatible with hydrophilic water.

All other arguments set forth in the amendment filed 2/26/2006 are moot in view of the new grounds of rejection set forth above.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vickey Ronesi whose telephone number is (571) 272-2701. The examiner can normally be reached on Monday - Friday, 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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5/5/2006

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